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ABSTRACT

The relative effectiveness of alternative reward structures in strengthening individual task performance was investigated by operationalizing six reward structure treatments--each of which combined one of two levels of differential group rewarding with one of three levels of differential rewarding within groups. Twelve males and twelve females worked on math problems in dyads for eleven performance pay trials in each of the six reward structure treatments. Although the math performance of females varied directly with both differential group rewarding and differential rewarding within groups as predicted, the performance of males did not. As indicated by the absence of interaction effects for both sexes, none of the six reward structure treatments were differentially effective in strengthening performance independent of the main effects of the differential rewarding manipulations. Reported satisfaction with the pay allocation varied inversely with the performance-pay inequities which occurred between subjects as a result of the differential rewarding within groups manipulations. Reported overall satisfaction, however, was apparently unaffected by the inequities. (Author)

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Effects of Differential Rewarding and
Inequity on Performance and Satisfaction

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Abstract

The relative effectiveness of alternative reward structures in strengthening individual task performance was investigated by operationalizing six reward structure treatments--each of which combined one of two levels of differential group rewarding with one of three levels of differential rewarding within groups. Twelve males and 12 females worked on math problems in dyads for 11 performance pay trials in each of the six reward structure treatments. Although the math performance of females varied directly with both differential group rewarding and differential rewarding within groups as predicted, the performance of males did not. As indicated by the absence of interaction effects for both sexes, none of the six reward structure treatments were differentially effective in strengthening performance independent of the main effects of the differential rewarding manipulations. Reported satisfaction with the pay allocation varied inversely with the performance-pay inequities which occurred between subjects as a result of the differential rewarding within groups manipulations. Reported overall satisfaction, however, was apparently unaffected by the inequities.

Effects of Differential Rewarding and Inequity on Performance and Satisfaction

Reward structures refer to the performance contingencies, criteria, or standards people must satisfy in order to receive presumably reinforcing consequences such as money, prizes, high grades, or promotions. Most studies investigating the effects of reward structures on task performance have used one or more of four basic reward structures. These are individual competition, group competition, individual reward contingencies, and group reward contingencies.

Although the four reward structures have occasionally been found to be differentially effective within studies, none apparently maintains a position of clear superiority across studies. Many of the inconsistent findings across studies are no doubt due to differences in the specific operationalizations of the reward structures (including type and magnitude of rewards used), the types of tasks to which the reward structures apply, and the ways in which performance was measured. Nevertheless, several general conclusions can be drawn from a review of the literature. First, performance contingent or differential rewarding is generally more effective in strengthening task performance than non-contingent or non-differential rewarding. Second, individual reward structures are generally more effective in strengthening individual performance on individual tasks, whereas group reward structures are generally more effective in strengthening group performance on cooperative tasks. Third, group reward structures are generally more effective than individual reward structures in strengthening group process variables such as communication, cooperation, and interpersonal attraction.

Conclusions regarding the relative effectiveness of competition and reward contingencies are precluded by the dearth of studies comparing individual and group competition with individual and group reward contingencies respectively. In fact, the competition and reward contingency literatures, with very few exceptions, remain separate.

The present investigation represents an attempt to bring the two research traditions together under a general operation common to both-- differential rewarding. The present experiment investigated the effects of differentially rewarding both groups and individuals within groups on the math performance of individuals performing in dyads. The study also sought to determine if any of six reward structures would be differentially effective independent of the main effects of differential group and within-group rewarding.

Formulation

Reward Structure Treatments

Two levels of differential group rewarding were paired with three levels of differential within-group rewarding to form six composite reward structures. The two levels of differential group rewarding were Fixed Group Rewarding (i.e., zero differential or non-contingent group rewarding) and Proportionate Group Rewarding (i.e., differential or contingent group rewarding). The three levels of differential within-group rewarding were the Equal Allocation (i.e., zero differential within-group rewarding), the Proportionate Allocation (i.e., moderate differential within-group rewarding), and the Disproportionate Allocation (i.e., high differential within-group rewarding) in which the higher performance on each performance trial received 75 percent of the group pay.

Fixed and Proportionate Group Rewarding were each paired with Equal, Proportionate, and Disproportionate Allocations of group rewards to form six reward structure treatments. The six resulting reward structures were: (a) non-contingent rewarding; (b) moderate individual competition; (c) high individual competition; (d) group reward contingency; (e) individual reward contingency; and (f) group reward contingency with high individual competition.

Hypotheses

It was predicted that individual task performance would vary directly with both differential group and within-group rewarding and that none of the six reward structures would be differentially effective in strengthening performance independent of the main effects of differential rewarding.

Method

Working in dyads, 12 white male and 12 white female subjects completed 11 performance-pay trials in each of the six reward structure treatments. On each trial subjects worked for two minutes on a set of three-step math problems. Performance (number of problems correct) was measured at the end of each trial, and subjects were paid according to reward structure treatment assigned. At the end of the experiment subjects completed a 17-item questionnaire on which they reported their satisfaction with various aspects of the experimental session.

Task performance measures were analyzed with separate 2 X 3 analyses of variance for males and females, whereas self-report measures were analyzed with a single 2 X 2 X 3 analyses of variance for effects due to Sex, Group Rewarding, and Reward Allocation.

Results

The three hypotheses relating performance to differential rewarding were supported only for females. Specifically, the performance of females varied directly with both differential group rewarding, being higher under Proportionate Group Rewarding than under Fixed, $F(1,66) = 4.45, p < .05$, and differential within-group rewarding, being highest under the Disproportionate Allocation, intermediate under the Proportionate Allocation, and lowest under the Equal Allocation, $F(2,66) = 7.72, p < .001$. As predicted, none of the reward structure treatments were differentially effective independent of the main effects of differential rewarding as indicated by the absence of a significant Group Rewarding-by-Reward Allocation interaction effect, $F(2,66) = 2.76$.

The performance of males, however, did not respond to either form of differential rewarding as predicted. In fact, the performance of males actually varied inversely with differential group rewarding, being higher under Fixed Group Rewarding than under Proportionate, $F(1,66) = p < .01$. The performance of males did not vary significantly by differential within-group rewarding, $F(2,66) = .35$, and no Group Rewarding-by-Reward Allocation interaction effect was indicated, $F(2,66) = .59$.

As expected, reported fairness of the pay allocation varied inversely with the cumulative performance-pay inequity between subjects which resulted in the Equal and Disproportionate Allocations of group pay, $F(2,132) = 21.82$, $p < .001$. Reported satisfaction with the pay allocation also varied inversely with the performance-pay inequity of the reward allocation, $F(1,132) = 11.20$, $p < .001$, but reported overall satisfaction did not, $F(2,132) = .69$. Thus, although the performance-pay inequity of the reward allocation apparently affected satisfaction with the reward allocation, overall satisfaction was apparently unaffected by inequity.

Discussion

The differential responsiveness of males and females to the differential rewarding manipulations were not accounted for by the differential rewarding formulation of the present investigation. Thus, the sex differences in responsiveness to the experimental manipulations require further investigation.

Consistent with previous findings, the math performance of males was generally higher than that of females. However, the math performance of females equalled that of males under both Proportionate Group Rewarding and Disproportionate Allocation. This finding suggests the math performance differential between the sexes may vary inversely with differential rewarding, be it at the group or within-group level.

Although an inverse relation between magnitude of inequity and reported satisfaction with the pay allocation was found, overall satisfaction

was unaffected by inequity. Thus, the magnitudes of inequity most subjects experienced were apparently insufficient to overcome the satisfaction derived from an otherwise profitable experience.

The present investigation conceptualized and operationalized reward structures in terms of a general operation common to all--differential rewarding. The operationalizations of the reward structures were consistent with their respective conceptualizations, made available the same type and approximate magnitudes of reward, and were operational across 11 performance-pay trials. The findings, however, offered no evidence that any of the six reward structures were differentially effective in strengthening individual task performance independent of the differential rewarding manipulations. The differential rewarding approach to reward structures can also be used to investigate the effects of differential rewarding on the cooperative or interdependent task performance of groups.